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## Investigation of red-cockaded woodpeckers in Virginia: 2004 report

D. S. Bradshaw

*The Center for Conservation Biology*

B D. Watts

*The Center for Conservation Biology, [bdwatt@wm.edu](mailto:bdwatt@wm.edu)*

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# Investigation of Red-cockaded Woodpeckers in Virginia: Year 2004 Report



Center for Conservation Biology  
College of William and Mary

# **Investigation of Red-cockaded Woodpeckers in Virginia: Year 2004 Report**

**Dana S. Bradshaw  
Bryan D. Watts  
Center for Conservation Biology  
College of William and Mary  
Williamsburg, VA 23187-8795**

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*Cover photo – Red-cockaded Woodpecker in Cluster 3.  
Photo by John Digiorgio*



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## TABLE OF CONTENTS

Executive Summary	iii
BACKGROUND.....	1
METHODS.....	1
Description	1
Banding	2
General Observations	2
RESULTS.....	4
Population Monitoring.....	4
Breeding Observations.....	4
Cavity Trees.....	8
Translocations.....	9
Banding.....	9
Historic Sites.....	12
ACKNOWLEDGEMENTS.....	13
APPENDIX I.....	14

## EXECUTIVE SUMMARY

A total of 21 resident birds were confirmed at Piney Grove at the onset of breeding season 2004. They were comprised of 5 translocated birds from previous years and 16 local adults and were distributed across 5 cluster sites as follows: Cluster 1 - 4 birds (included 1 SC translocated helper male); Cluster 3 – 7 birds (included one NC translocated female as the breeding female); Cluster 5 – 6 birds; Cluster 6 – 1 translocated SC male; and Cluster 7 – 2 birds (including 1 SC translocated male). One additional SC translocated male was observed at multiple sites throughout the spring, but was never associated with any particular cluster and was not seen after the breeding season.

Of five active clusters, only Clusters 1, 3, and 5 bred successfully, producing a total of 11 eggs, of which 10 hatched and 7 young fledged; 4 females and 3 males. There was one documented mortality of a nestling. Cluster 6 was observed to have a male and female present on and off during the season, although breeding did not occur. Cluster 7 also had a pair of birds, but a storm damaged the primary cavity tree at the onset of breeding season which may have precluded a nesting attempt.

No birds were translocated to Piney Grove in 2004 due to the presence of pairs at all of the primary sites and the lack of additional suitable cluster sites following damage from Hurricane Isabel in late 2003.

An additional red-cockaded woodpecker continued to persist in southwestern Southampton County on private land. A Habitat Conservation Plan was produced toward garnering an Incidental Take Permit (ITP) so that the landowner could harvest that timber upon translocation of that bird to Piney Grove. The ITP was granted and the translocation of that bird to Piney Grove was pending at the close of 2004.

## BACKGROUND

The Red-cockaded Woodpecker is still in eminent danger of extinction within Virginia. As recently as the late 1970's, 23 clans were known scattered across 5 counties. Currently, 3 productive clans exist in a single county. A range-wide survey in 1997 of old-growth pine forests in Virginia yielded fewer than a dozen sites comprising less than 2500 ha. Over 60% of this habitat has now been harvested. The Nature Conservancy's Piney Grove Preserve now contains over 1000 ha of mixed age class pine timber and provides the only sanctuary for the species in the state.

With over a dozen cluster sites now available for birds, there is an aggressive program underway to restore this population. Intensive management of extant clans along with extensive habitat restoration is underway to stabilize the population and bring it back to pre-1980 levels. Translocations have been underway for 3 of the last 4 years and will continue toward increasing the small gene pool and establish clans on new sites. An aggressive squirrel control program is underway along with intensive monitoring of cavity and tree status within each cluster. Management activities will be most effective if coupled with an intensive monitoring program.

Objectives – The primary objective of this project was to monitor the population within the Piney Grove Preserve. A secondary objective was to collect information relevant to the continued management of birds and their habitat. Specific objectives include

- 1) Determine the number and identification of all birds within each group at the throughout the breeding season.
- 2) To monitor the breeding activity of active pairs for the purpose of coordinating banding activities and determining productivity.
- 3) To monitor the status of cavity trees.

## METHODS

### Description

Piney Grove Preserve contains an old-growth loblolly and short-leaf pine community in Sussex County, Virginia. The site supports a complex of moderate-age pine stands interspersed with pockets of older trees ranging from 80 to 140 years. Historically, the site was managed for saw timber on a relatively long rotation by Gray Lumber Company. The site was purchased by Hancock Timber Resource Group in 1993. Under Hancock Timber's management, site quality was improved by removing the dense hardwood understory. The Nature Conservancy purchased the tract from Hancock Timber in 1998. The Nature Conservancy has developed an aggressive management program designed to restore the disturbance regime necessary to return the site to an open pine savannah.

A single clan of Red-cockaded Woodpeckers was discovered within this site in 1985. A second clan was discovered in 1994 and a third in 1995. These 3 clans still

remain active. Since 1999, there have been nine recruitment clusters established by The Nature Conservancy through the installation of artificial cavities. There are now 11 independent cluster sites with either natural or artificial cavities (Figure 1).

## **Banding**

**Adults** - In 1998, Don Schwab banded 10 Red-cockaded Woodpeckers within the Piney Grove complex. Observations made during 2004 indicate that several of these birds are still present within the population (see results section below). Two adult birds are still unbanded as of this year. Attempts have been made on both birds in the past, although no additional banding efforts were attempted on these adults in 2004.

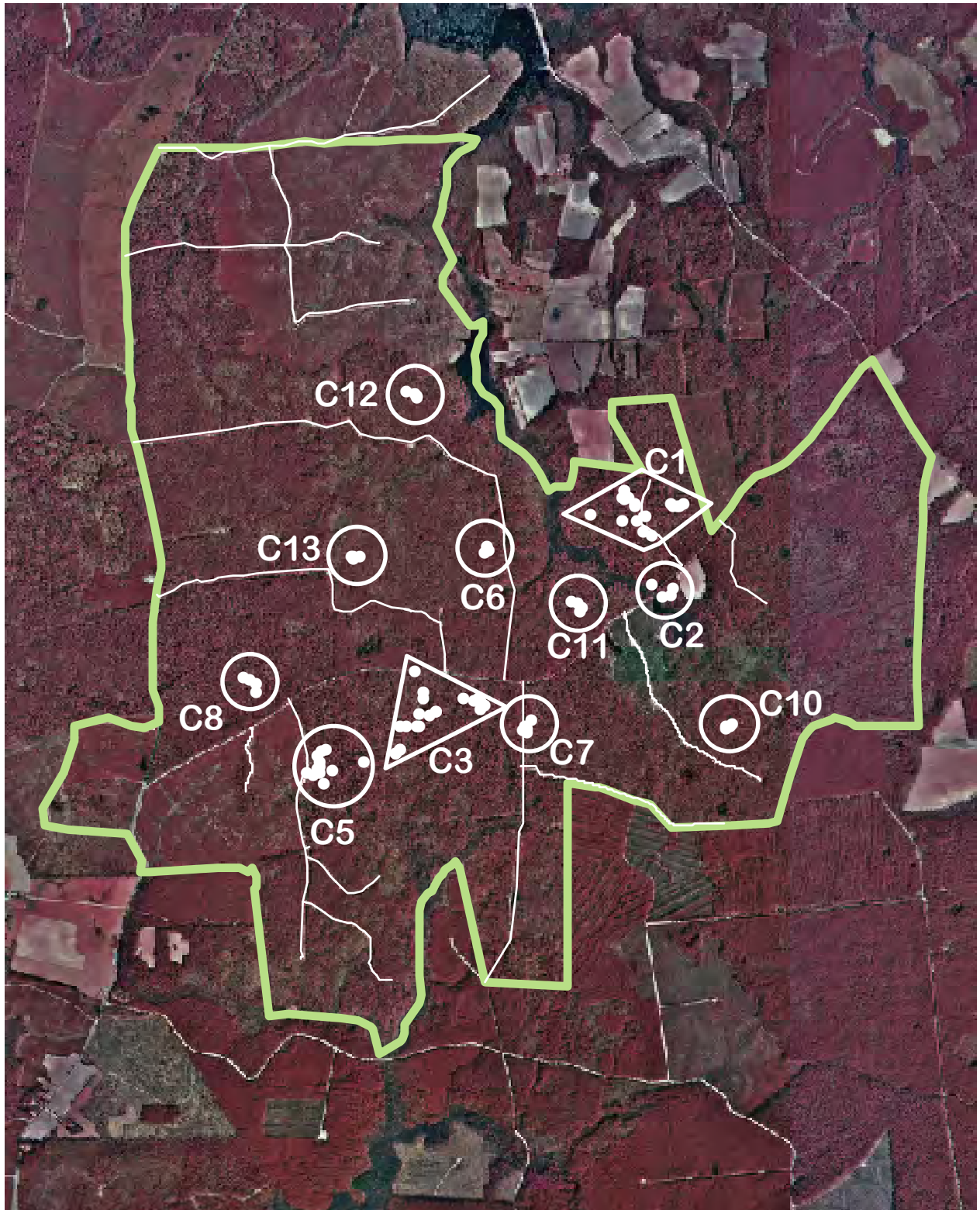
**Nestlings** - For logistical and safety reasons, banding of Red-cockaded Woodpecker nestlings is restricted to an age window of 5-9 days. Because of this restriction, close monitoring of breeding activity is essential to successful banding. During the early portion of the breeding season, both the breeding pair and the nest cavity from each cluster area were monitored closely to determine clutch initiation dates. The nest cavity within Clusters 1 and 3 was monitored regularly by inserting a video camera into the cavity entrance and inspecting the cavity for the presence of eggs. Due to the height of the nest cavity within Cluster 5 video monitoring was not possible. Breeding status was determined by observation of breeding birds. After dates of incubation were determined, an estimated hatching date was calculated. Nest cavities were monitored closely around the time of expected hatching to verify hatch dates. The window for banding was determined from estimated hatching dates.

All nestlings were banded during the recommended age window. Nest trees were climbed with ladders and nestlings were extracted from cavities using a noose apparatus. Nestlings were then lowered to the ground, banded, and returned to the cavity. Each nestling received a unique combination of color bands as described above. Nestlings were also weighed using a Pesola spring scale.

## **General Observations**

During the course of banding operations, numerous observations of birds within the three cluster areas were made and recorded. Most of these observations were made when birds roosted in the evening or when they emerged in the morning. These observations were used to construct patterns of occurrence for individual birds, estimates of population size, patterns in cavity use, patterns in the presence and distribution of cavity competitors, etc. Additional observations were made within other cluster sites where birds were known, or thought, to occur in order to determine nesting activity and confirm identities of additional birds not involved in breeding clusters.





**Figure 1.** Piney Grove Preserve and available RCW Cluster Sites. Clusters 1, 3, 5, 6, and 7 were active in 2004.



## RESULTS

### Population Monitoring

Twenty-one birds were known to be present within the Piney Grove preserve going into the breeding season of 2004 (Table 1). This included 4 birds in Cluster 1, 7 birds in Cluster 3, 6 birds in Cluster 5, 1 bird in Cluster 6, 2 birds in Cluster 7, and one bird at-large with no particular cluster ties (Table 2). This total comprises 16 resident birds and 5 translocated birds remaining from previous years. This compares to 20 birds in 4 clusters during the same period in 2003.

### Breeding Observations

All three active clusters within the Piney Grove Preserve that were productive in 2003 were also productive in 2004. Detailed breeding observations and status for each clan are presented below. Temporal occurrence for all birds documented at Piney Grove follows in Table 1.

Cluster 1 – The breeding pair from 2003 was retained at this site and was comprised of a resident male from Cluster 1 and female fledged in 2002 from Cluster 3. Tree #48 was again the nest tree. Four eggs were laid and 4 young were banded at 6 days of age on May 16. Chicks were developmentally behind their expected weights for that age, ranging from 10-13 grams in weight. This may have been related to small overall group size. Only 2 young were documented to have fledged successfully following two post-fledging visits to the cluster, one male and one female.

Cluster 3 – This site also has a breeding pair in only its second year after installation. The male was a Cluster 3 fledgling from 2001 who took over after the predation death of the breeding male in 2003. The breeding female for the second consecutive year is a female translocated from North Carolina in 2003. This pair nested relatively late in 2004, possibly due to continued interference from three RCW intruders trying to usurp the cavity trees. A South Carolina male in conjunction with a 2003 fledged C3 female were repeatedly chased from the Cluster numerous times during the peak of the breeding season. An additional SC translocated female was also observed in the mix on one occasion. The C3 pair finally laid 3 eggs in mid-May and 3 newly hatched chicks were observed on May 24. Cavity #3 was retained as the nest cavity for the second year. The banding team arrived on May 30 and extracted 3 young from the nest, although one of the young expired upon removal. No cause of death could be determined. The chick was collected for subsequent evaluation. The remaining two chicks were banded, and were later determined to be one of each sex.

Cluster 5 – The breeding pair at this site contains two birds that were both banded as adults in 1998. The nest cavity was relocated to Tree #21 this year, following the loss of Tree #97 during Hurricane Isabel. Incubation was first suspected on April 27. Food deliveries were first observed on May 8. Three chicks were banded on May 16 and

determined to be 8 days of age, weighing 28 to 31.5 grams. Post-fledging observations determined these to be two males and one female.

Cluster 6 – A lone SC translocated male was observed at Cluster 6 early in the spring, and this same bird in conjunction with a Cluster 1 female was observed in the fall, although there was no activity at the site during the breeding season.

**Table 1.** Roost cluster for Red-cockaded Woodpecker detected within Piney Grove Preserve during 2004.

Roost Cluster	FWS Number	ClusterID (left leg)	Bird ID (right leg)	Sex	Age
C1	1581-66224	DG/YE/DG	RE2/AL	M	4
C1	1751-83142	AL/OR	DB/DB/WH	M	2
C1	1581-66230	WH/LB/WH	AL/YE	F	4
C1	1581-66245	DG/YE/DG	AL/LB	M	2
C1	1581-66246	DG/YE/DG	AL/PU	M	HY
C1	1581-66256	DG/YE/DG	AL/LG	F	HY
C3		Unbanded	Unbanded	U	> 4
C3	1581-66215	RE/DB	LG1/AL	U	> 4
C3	1581-66214	RE/DB	WH/AL	M	4
C3	1581-66228	RE/DB/RE	PU2/AL	M	4
C3	801-40249	BK/YE/DB	RE/AL	F	2
C3	1581-66236	RE/DB/RE	AL/LB	F	1
C3	1581-66244	RE/DB/RE	AL/DG	M	1
C3	1581-66254	DB/RE/DB	AL/RE	M	HY
C3	1581-66253	DB/RE/DB	AL/WH	F	HY
C5	1581-66202	WH/LB/WH	LG/AL	M	$\geq 7$
C5	1581-66207	WH/LB/WH	WH/AL	F	$\geq 7$
C5	1581-66212	WH/LB/WH	YE/AL	M	4
C5		Unbanded	Unbanded	U	$\geq 6$
C5	1581-66231	WH/LB/WH	PK2/AL	M	3
C5	1581-66238	WH/LB/WH	AL/PU	F	1
C5	1581-66251	LB/WH/LB	AL/DB	M	HY
C5	1581-66250	LB/WH/LB	AL/PI	M	HY
C5	1581-66252	LB/WH/LB	AL/LB	F	HY
C6	1581-66241	DG/YE/DG	AL/LG	F	HY
C6	1751-83183	AL/OR	YE/YE/WH	M	HY
C7	951-26305	AL/YE	YE/YE/WH	M	HY
C7	1581-66242	RE/DB/RE	AL/LB	F	HY



(Left) Bryan Watts extracting RCW nestlings for banding (photo by Marian Watts).  
(Right) RCW nestling before banding

Cluster 7 – A SC translocated male was observed sharing Cluster 7 with a 2003 C3 fledged female early in the spring. A spring storm destroyed the primary cavity tree at this site at the onset of breeding season (late April) and the pair abandoned the Cluster. Both birds were subsequently observed trying to usurp cavities at both Cluster 3 and Cluster 5 during early May and were systematically chased away by the resident birds. The two birds were observed later in the year loosely associated with Cluster 7, but no breeding attempt was ever documented.

**Table 2 .** Table of temporal occurrence for birds in Piney Grove from 1998 to Fall 2004.

FWS	Left Leg	Right Leg	Sex	1998	2000	2001	2002 Spr	2002 Fall	2003 Spr	2003 Fall	2004 Spr	2004 <sup>1</sup> Fall
<b>Piney Grove</b>												
1581-66204	RE/DB/RE	PU1/AL	F	X								
1581-66208	RE/DB/RE	PK1/AL	U	X								
1581-66210	WH/LB/WH	DB1/AL	U	X								
1581-66201	WH/LB/WH	RE/AL	M	X	X							
1581-66209	DG/YE/DG	PU/AL	F	X	X							
1581-66206	DG/YE/DG	DB/AL	M	X	X							
1581-66203	RE/DB/RE	YE/AL	F	X	X	X	X	X	X			
1581-66205	RE/DB/RE	DG/AL	M	X	X	X	X	X	X			
1581-66202	WH/LB/WH	LG/AL	M	X	X	X	X	X	X	X	X	X
1581-66207	WH/LB/WH	WH/AL	F	X	X	X	X	X	X	X	X	X
1581-66213	WH/LB/WH	DB2/AL	F		X							
1581-66216	RE/DB	RE1/AL	U		X							
1581-66221	WH/LB/WH	PK1/AL	U		X							
1581-66211	DG/YE/DG	RE1/AL	F		X							
1581-66223	DG/YE/DG	YE/AL	F		X							
1581-66222	WH/LB/WH	AL/RE	U		X	X						
1581-66219	DG/YE/DG	WH/AL	M		X	X	X	X				
1581-66215	RE/DB	LG1/AL	U		X	A	X	X	X	X	X	X
C-3 Unbanded	Unbanded	Unbanded	U		X	X	X	X	X	X	X	
1581-66214	RE/DB	WH/AL	M		X	X	X	X	X	X	X	A
1581-66212	WH/LB/WH	YE/AL	M		X	X	X	X	X	X	X	X
1581-66220	WH/LB/WH	PU/AL	U		X	?	?	?	?	?	X	X
C-5 Unbanded	Unbanded	Unbanded	M		X	X	X	X	X	X	X	X
1581-66225	RE/DB/RE	RE2/AL	M			X						
1581-66226	RE/DB/RE	LG2/AL	F			X						
1581-66227	RE/DB/RE	PK2/AL	M			X	X					
1581-66229	WH/LB/WH	DG/AL	F			X	X					
1581-66228	RE/DB/RE	PU2/AL	M			X	X	X	X	X	X	
1581-66224	DG/YE/DG	RE2/AL	M			X	X	X	X	X	X	X
1581-66231	WH/LB/WH	PK2/AL	M			X	X	X	X	X	X	X
1581-66236	RE/DB/RE	AL/DB	M				X					
1581-66232	WH/LB/WH	AL/DB	M				X	X	X			
1581-66233	WH/LB/WH	AL/LB	F				X	X	X			
1581-66234	RE/DB/RE	AL/YE	F				X	X	X	X		
1581-66230	WH/LB/WH	AL/YE	F				X	X	X	X	X	X
1581-66235	RE/DB/RE	AL/RE	F				X	X	X			
1581-66239	WH/LB/WH	AL/DG	U						X			
1581-66243	RE/DB/RE	AL/PK	F						X			
1581-66246	DG/YE/DG	AL/PU	U						X			
1581-66238	WH/LB/WH	AL/PU	F						X	X	X	X
1581-66244	RE/DB/RE	AL/DG	M						X	X	X	
1581-66242	RE/DB/RE	AL/LB	F						X	X	X	X
1581-66237	WH/LB/WH	AL/RE	M						X	X		
1581-66245	DG/YE/DG	AL/LB	M						X	X	X	X

**Table 2 - continued**

FWS	Left Leg	Right Leg	Sex	1998	2000	2001	2002 Spr	2002 Fall	2003 Spr	2003 Fall	2004 Spr	2004 <sup>1</sup> Fall
1581-66249	DG/YE/DG	AL/DB	U								X	
1581-66247	DG/YE/DG	AL/WH	U								X	
1581-66248	DG/YE/DG	AL/PU	M								X	X
1581-66241	DG/YE/DG	AL/LG	F								X	X
1581-66250	LB/WH/LB	AL/PK	M								X	X
1581-66252	LB/WH/LB	AL/LB	F								X	X
1581-66254	DB/RE/DB	AL/RE	M								X	X
1581-66251	LB/WH/LB	AL/DB	M								X	A
1581-66253	DB/RE/DB	AL/WH	F								X	X
1581-66259	DG/YE/DG	AL/DG	F									
1581-66256	LB/WH/LB	AL/OR	F									
1581-66262	DB/RE/DB	AL/YE	F									
<b>Translocated</b>												
1751-83047	AL/LG	DB/DB/YE	M			X						
1681-89697	AL/LB	ST/ST/OR	F			X						
1681-89743	AL/DG	WH/WH/PU	F			X	X	X				
1751-42837	YE/DB/YE	WH/AL	M				X					
1751-42838	YE/DB/YE	LG/AL	M				X					
801-40249	BK/YE/DB	RE/AL	F				X	X	X	X	X	X
1751-83163	AL/OR	DG/DG/OR	F					X				
1751-83133	AL/WH	ST/ST/OR	F					X				
1751-83208	AL/OR	WH/WH/MV	M					X				
1681-89800	AL/LG	PU/PU/LG	M					X				
1751-82968	AL/WH	OR/OR/DB	F					X				
1751-83201	AL/OR	WH/WH/LB	F					X				
1751-83213	AL/OR	OR/OR/LG	M					X				
1751-83142	AL/OR	DB/DB/WH	M					X	X	X	X	X
1751-83234	AL/YE	WH/WH/WH	F							X		
951-26443	AL/YE	DG/DG/LG	F							X		
951-26448	AL/YE	DG/DG/MV	M							X	A	A
1751-83183	AL/OR	YE/YE/WH	M							X	X	X
951-26305	AL/YE	YE/YE/WH	M							X	X	X

<sup>1</sup> Few fall observations were made in 2004 thereby precluding the ability to adequately assess presence/absence of birds after the breeding season.

## Cavity Trees

Tree Measurements – No new tree measurements were taken in 2004.

Cavity Maintenance – Maintenance activity was not recorded in 2004.

Cavity Use – Clusters 1 and 3 retained the same nest cavities as were used in 2003. Cluster 5 used a new cavity, Tree #93, following the loss of the historical nest tree to Hurricane Isabel.

Cavity Damage – No comprehensive data were recorded. Cluster 5 – Tree #23 had sustained additional damage from Pileated Woodpeckers and will require a cavity excluder device. Tree #22 had recent beetle infestation, but like Tree #93, was not showing crown damage yet.

Cavity competitors – Cluster 1 - Great-crested Flycatchers were observed nesting in Tree # 49; and Red-headed Woodpeckers were observed nesting in the un-numbered leaning cavity tree at the far northern edge of the Cluster. Cluster 3 – White-breasted nuthatches nested in the old nest cavity in Tree #79. Cluster 5 – Northern Flickers were seen investigating several cavities, but were not documented nesting. Several flying squirrels were removed from cluster sites throughout Piney Grove in 2004.

## **Translocations**

There were no RCWs translocated to Piney Grove Preserve in 2004, largely because of the intermittent presence of birds at most of the other suitable cluster sites and the donor population in South Carolina was not in a condition to permit donation.

## **Banding**

Since the spring of 1998, 53 different birds have been banded within the Piney Grove complex (Table 3). This includes 10 birds in 1998 and 11, 8, 6, 9, and 9 birds respectively each year from 2000 through 2004. All birds banded since 2001 have been nestlings. The nine nestlings banded in 2004 yielded only seven fledglings: 4 males and 3 females (Table 4).

Two adult birds remain unbanded within Piney Grove. These include one bird each in clusters 3 and 5. These birds have been monitored closely and have tended to utilize cavities that are beyond the height reachable with the telescopic net. Monitoring is ongoing to determine when or if these birds relocate to situations that would allow for safe capture.

**Table 3.** Summary of individual Red-cockaded Woodpeckers banded within Piney Grove (1998-2004).

Date	CI	FWS	Left	Right	Age	Sex	Wing	Culmen	Weight
01/11/98	1	1581-66206	DG/YE/DG	DB/AL	AHY	M	----	----	----
08/15/98	1	1581-66209	DG/YE/DG	PU/AL	AHY	F	----	----	----
04/05/00	1	1581/66211	DG/YE/DG	RE/AL	AHY	F	122	17.9	47.5
05/29/00	1	1581-66219	DG/YE/DG	WH/AL	~7-8d	U	----	----	24.0
04/28/01	1	1581-66219	DG/YE/DG	WH/AL	SY	M	117	16.8	47.0
10/02/00	1	1581-66223	DG/YE/DG	YE/AL	AHY	F	120	16.6	----
04/28/01	1	1581-66224	DG/YE/DG	RE/AL	AHY	M	118	16.9	48.0
09/26/01	1	1681-89697	AL/LB	ST/ST/OR	HY	F <sup>3</sup>	----	----	----
06/12/03	1	1581-66245	DG/YE/DG	AL/LB	~8d	M <sup>2</sup>	----	----	23.0
06/12/03	1	1581-66246	DG/YE/DG	AL/PU	~8d	- <sup>3</sup>	----	----	13.0
05/16/04	1	1581-66241	DG/YE/DG	AL/LG	6d	F <sup>2</sup>	----	----	13.5
05/16/04	1	1581-66247	DG/YE/DG	AL/WH	6d	- <sup>3</sup>	----	----	10.0
05/16/04	1	1581-66248	DG/YE/DG	AL/PU	6d	M <sup>2</sup>	----	----	12.5
05/16/04	1	1581-66249	DG/YE/DG	AL/DB	6d	- <sup>3</sup>	----	----	12.5
02/10/98	3	1581-66203	RE/DB/RE	YE/AL	AHY	F	117	17.0	47.8
02/11/98	3	1581-66204	RE/DB/RE	PU/AL	AHY	F	----	----	----
02/11/98	3	1581-66205	RE/DB/RE	DG/AL	AHY	M	----	----	----
08/10/98	3	1581-66208	RE/DB/RE	PK/AL	HY	U	----	----	----
05/12/00	3	1581-66214	RE/DB	WH/AL	~7d	U	----	----	11.0
01/29/02	3	1581-66214	RE/DB	WH/AL	SY	M	119	16.8	48.5
05/12/00	3	1581-66215	RE/DB	LG/AL	~7d	U	----	----	12.0
05/12/00	3	1581-66216	RE/DB	RE/AL	~7d	U	----	----	12.0
05/09/01	3	1581-66225	RE/DB/RE	RE/AL	~7d	M <sup>2</sup>	----	----	25.0
05/09/01	3	1581-66226	RE/DB/RE	LG/AL	~7d	F <sup>2</sup>	----	----	27.0
05/09/01	3	1581-66227	RE/DB/RE	PK/AL	~7d	M <sup>2</sup>	----	----	29.0
05/09/01	3	1581-66228	RE/DB/RE	PU/AL	~7d	U	----	----	22.0
05/10/02	3	1581-66234	RE/DB/RE	AL/YE	~5d	F <sup>2</sup>	----	----	13.0
05/10/02	3	1581-66235	RE/DB/RE	AL/RE	~5d	F <sup>2</sup>	----	----	19.0
05/10/02	3	1581-66236	RE/DB/RE	AL/DB	~5d	M <sup>2</sup>	----	----	20.0
05/26/03	3	1581-66242	RE/DB/RE	AL/LB	~9d	F <sup>2</sup>	----	----	29.0



Table 3 - continued

Date	CI	FWS	Left	Right	Age	Sex	Wing	Culmen	Weight
05/26/03	3	1581-66243	RE/DB/RE	AL/PI	~9d	F <sup>2</sup>	----	----	32.5
05/26/03	3	1581-66244	RE/DB/RE	AL/DG	~9d	M <sup>2</sup>	----	----	32.5
05/30/04	3	1581-66253	DB/RE/DB	AL/WH	7d	F <sup>2</sup>	----	----	??
05/30/04	3	1581-66254	DB/RE/DB	AL/RE	7d	M <sup>2</sup>	----	----	??
02/09/98	5	1581-66201	WH/LB/WH	RE/AL	AHY	M <sup>1</sup>	----	----	----
02/10/98	5	1581-66202	WH/LB/WH	LG/AL	AHY	M	121	18.0	----
02/12/98	5	1581-66207	WH/LB/WH	WH/AL	U	F <sup>1</sup>	----	----	----
08/16/98	5	1581-66210	WH/LB/WH	DB1/AL	HY	U	----	----	----
04/20/00	5	1581-66212	WH/LB/WH	YE/AL	AHY	M	118	17.5	46.0
04/30/00	5	1581-66213	WH/LB/WH	DB2/AL	AHY	F	122	17.0	44.0
06/16/00	5	1581-66220	WH/LB/WH	PU/AL	~7d	U	----	----	30.0
06/16/00	5	1581-66221	WH/LB/WH	PK/AL	~7d	U	----	----	32.0
06/16/00	5	1581-66222	WH/LB/WH	AL/RE	~7d	U	----	----	26.0
05/16/01	5	1581-66229	WH/LB/WH	DG/AL	~7d	F <sup>2</sup>	----	----	24.0
05/16/01	5	1581-66231	WH/LB/WH	PK/AL	~7d	M <sup>2</sup>	----	----	22.0
05/10/02	5	1581-66230	WH/LB/WH	AL/YE	~7d	F <sup>2</sup>	----	----	26.0
05/10/02	5	1581-66232	WH/LB/WH	AL/DB	~7d	M <sup>2</sup>	----	----	27.0
05/10/02	5	1581-66233	WH/LB/WH	AL/LB	~7d	F <sup>2</sup>	----	----	24.0
05/12/03	5	1581-66237	WH/LB/WH	AL/RD	~8d	M <sup>2</sup>	----	----	21.0
05/12/03	5	1581-66238	WH/LB/WH	AL/PU	~8d	F <sup>2</sup>	----	----	25.0
05/12/03	5	1581-66239	WH/LB/WH	AL/DG	~8d	- <sup>3</sup>	----	----	25.0
05/12/03	5	1581-66240	WH/LB/WH	AL/LG	~8d	M <sup>2</sup>	----	----	25.0
05/16/04	5	1581-66250	LB/WH/LB	AL/PK	8d	M <sup>2</sup>	----	----	31.5
05/16/04	5	1581-66251	LB/WH/LB	AL/DB	8d	M <sup>2</sup>	----	----	28.0
05/16/04	5	1581-66252	LB/WH/LB	AL/LB	8d	F <sup>2</sup>	----	----	29.0

<sup>1</sup> Initially banded as opposite sex but behavioral observations confirm sex.

<sup>2</sup> Gender determined during fledge checks.

<sup>3</sup> Chick did not survive to fledging.

**Table 4.** Red-cockaded Woodpecker nestlings banded at Piney Grove Preserve in 2004.

Date	Cluster	Band #	Lft Combo	Rt Combo	Age	Weight	Sex
5/16/2004	1	1581-66241	YE/DG	AL/LG	6d	13.5	F
5/16/2004	1	1581-66247	YE/DG	AL/WH	6d	10	U
5/16/2004	1	1581-66248	YE/DG	AL/PU	6d	12.5	M
5/16/2004	1	1581-66249	YE/DG	AL/DB	6d	12.5	U
5/16/2004	5	1581-66250	LB/WH/LB	AL/PK	8d	31.5	M
5/16/2004	5	1581-66251	LB/WH/LB	AL/DB	8d	28	M
5/16/2004	5	1581-66252	LB/WH/LB	AL/LB	8d	29	F
5/30/2004	3	1581-66253	DB/RE/DB	AL/WH	7d	19.5	F
5/31/2004	3	1581-66254	DB/RE/DB	AL/RE	7d	21	M

### Historic Sites

Only 3 historic sites still contain standing mature timber, and only one continues to support a RCW.

#### Sussex County – Route 40

This site remains part of the Gray Family Trust and has not yet been slated for harvesting. All of the former foraging area around the site has been harvested, and there has been no evidence of RCW activity at the site since 1997. The site has deteriorated significantly due to hardwood encroachment and is now too small to support RCWs even if it were improved through management.

#### Sussex County – Route 460

This site has deteriorated from hardwood encroachment and general stand timber density problems. Habitat on all sides of it has been harvested and there is little left that is reminiscent of RCW habitat. This site should no longer be considered for possible management.

#### Southampton County – Grizzard Tract\_Route 612

This site has recently been purchased from Hancock Timber Resources by Virginia-Carolina Properties, Inc. VA-CAR Properties has approached the USFWS about harvesting the site and was told a Section 10 Incidental Take Permit (ITP) would be required, which in turn, would require a Habitat Management Plan to show what actions would be taken to offset the loss of the site. VA-CAR Properties initiated steps to secure the ITP and to produce a Habitat Management Plan through contractual arrangements. The ITP was still pending in late 2004 which would clear the way for relocating the lone male RCW present at the site. It was agreed that the bird would not be moved until early 2005 and then would be tranlocated to Piney Grove. The RCW present is estimated to be at least 11 years old based on the initial discovery of the bird in 1994.

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### Appendix I. Piney Grove Field Observations - 2004

Cluster 1 Observations – 2004		
Date	Observer	Notes
5/1/04	D. Bradshaw	Arrived at site at 0830. Peeped nest cavity (#48) and observed 4 eggs.
5/8/04	D. Bradshaw	<p>Arrived at site 0820. No birds observed in area. At 0835 YE female came in and replaced RE male in cavity. Then at 0855 SC male replaced YE female. YE female returned and took over at 0905. Departed at 0915. No food deliveries observed. LB juvenile male observed in area but not helping at nest.</p> <p>GCFLs building nest in adjacent tree (#49), and RHW0 seen entering and exiting leaning RCWO cavity at far NE sector of cluster.</p>
5/10/04	D. Bradshaw	Arrived at site at 0800 and observed repeated visits by breeding male, female, and SC helper, with no evidence of food deliveries. Finally, after several visits I was able to detect extremely small prey items being delivered. Chicks must have hatched within last few hours.
5/16/04	D. Bradshaw B. Watts M. Byrd C. Markham B. & L. Cole S.	Arrived at site at 0845 with banding party. Banded 4 chicks 6 days old. Colors used included White, Purple, Lt Green, Dk Blue. The C1 young were developmentally behind their C5 counterparts, probably a function of increased group size at C5. Although known to be at least 6 days of age, the C1 young aged out at 5 days based on the aging chart, and their weights ranged from a mere 10 to 13 grams.
6/6/04	D. Bradshaw	Conducted a first fledge check but could only locate 2 of the 4 banded chicks (PU=male; LG=female). I observed the birds for a little over 2 hours, and will plan to be back there again within the next week for another round but it may end up just 2 young.
6/7/04	D. Bradshaw B. Watts	Completed cavity checks in cluster and located 2 flying squirrels in Tree 117. It was too late in the day however to get equipment together to remove them.
6/13/04	D. Bradshaw	Arrived at sunrise and was unable to detect where juvenile birds emerged from, but observed 5 birds foraging in area for about 1 hour. Identified breeding male, female, SC male, and two young from previous visit: purple male, and light green female. There was no evidence to suggest that either of the two missing fledglings were present. Given their low body weights relative to age, it is likely that these two did not fledge successfully.

Cluster 3 Observations – 2004		
Date	Observer	Notes
4/18/04	D. Bradshaw	Arrived at site at 0655. Finally detected 3 birds down in bottom area between trees 3&4 and the C4 inserts. They moved east toward the edge of the open stand and then turned north back toward main cluster site. From there they headed away to the northeast. By the time they moved off I had detected at least 5 different birds, but few IDs. Only clearly observed birds were NC breeding female (RE/AL), C3 LG/AL, and a foreign NC bird that appeared to be the male from C7 (left leg AL/YE; right leg WH bottom band). I located a new start/cavity near the southeast edge of the stand. It's an excavated limb bud, but no obvious resin wells yet. Need to peep to see if complete. Looks good though. Departed at 0745.
5/1/04	D. Bradshaw	Cluster 3 appears to be delaying nesting for the time being. And this appears to be due to the continued presence of foreign birds within the cluster. I arrived at the site at 0715 and observed two independent territorial events taking place continuously for the 45 minute period that I was there. In one situation, the breeding female, assisted by one of the helper males (WH/AL) was vigorously chasing one of the C3 juvenile females (AL/LB) from 2003. Not sure what's behind that. In the other situation, the breeding male, assisted by the unbanded bird was chasing a SC male (AL/YE -YE/YE/WH). Still more interesting was the presence of a SC female at the site, not participating in the chasing (AL/YE -DG/DG/LG). This SC male and female pair were last observed in the vicinity of Cluster 6 in October 2003. However, the SC male was recently observed roosting in C3 (in insert #2). (The SC female may have been at the site as well, but previously went undetected.) Perhaps the SC male and the C3 juvenile female were attempting to pair up at the site and are now being evicted? Where does that leave the SC female? At any rate, I believe the presence of these different pairs is delaying the nesting attempt at C3 to date.
5/15/04	D. Bradshaw	Arrived at 0550 just as birds began to emerge. Birds were very quiet and it was difficult determining what was going on. Finally ID'd the breeding female and observed her working on resin wells on cavity tree #. Followed her out of the cluster to the northeast where she was traveling with the WH/AL bird and AL/DB bird. After 30 minutes she returned to the cluster site and was observed traveling down to Cav Tree #3. I went

5/15/04 cont.		back down to that area just as a bird entered the cavity. It spent 45 minutes in the cavity and was then replaced by the WH/AL bird. The bird emerging was the breeding female. After 15 more minutes, the WH bird emerged and was replaced by the breeding male (PU/AL). I departed the site at 0730.
5/22/04	D. Bradshaw	Arrived at site at 1900 with peeper. Tapped on tree #3 and a bird emerged and departed the site. Peeped the cavity and observed 3 eggs. Departed immediately after.
5/24/04	D. Bradshaw	Arrived at site at 1000 with peeper. Tapped on tree #3 and a bird emerged, and flew to an adjacent tree vocalizing. Other birds then began to appear. I peeped the cavity and observed 3 tiny chicks and 4 egg shell halves. The chicks all appeared to have hatched within the last few hours. I departed the site immediately thereafter.
5/30/04	B. Watts M. Watts D. Schwab J. & Y. DiGiorgio	The banding team arrived at 0900 and extracted 3 young within a few minutes of arriving. Two young were banded and determined to be 7 days of age with healthy weights. A third young of similar condition was extricated from the cavity but died during the extraction process. There was no indication of external injury or of mishandling, but the young was collect by D. Schwab for later evaluation.
6/11/04	D. Bradshaw	Stopped in at C3 around mid-afternoon to peep the cavity for chick IDs. It was easy to tell that there was 1 male and 1 female chick, but they were too large in the cavity to get a look at the color bands. Need to return in a few days to locate and ID the fledglings.
7/4/04	D. Bradshaw	Arrived at sunrise and monitored the group for 45 minutes until both young were identified. AL/Red = male; AL/WH = female

#### Cluster 5 Observations – 2004

Date	Observer	Notes
4/18/04	D. Bradshaw	Arrived at 0755. Birds were present in the front end of the cluster site working on cavities and foraging. I followed the birds east a short ways and then they turned north and disappeared toward 604. Still unable to confirm more than 6 birds. ID'd were the two breeders (LG/AL & WH/AL) plus the unbanded bird and AL/PI. There was at least one additional juvenile bird present but could not make out the lower color band. Went back to evaluate the cavities. Cav #23 has sustained additional damage from pileateds. Entrance hole is

		missing chunks along left and upper edges. Little fresh work on this cavity. Suspect it will not be nest tree. Tree #22 has recent beetle infestation. Beetle evidence present from ground to approx. 8 ft. Beetle presence still evident on Tree 93, but no damage to crown foliage yet. Broken off snag cavity beside Tree #24 shows much fresh work, with many new resin wells and still fresh resin flow. Departed site at 0900.
4/22/04	D. Bradshaw B. Watts	Conducted cavity checks for cavity condition going into nesting season. Most suitable cavities looked good. Cavity #93 appeared in best condition to receive eggs.
4/27/04	D. Bradshaw	Arrived about two hours before sunset. At approximately an hour and a half before sunset, a lone bird moved in from some distance and exchanged with a bird in cavity number #93. No IDs were made. Suspected incubation underway.
4/29/04	D. Bradshaw	Arrived at 0630. Incubation was confirmed with periodic exchanges at the nest tree (#93) and consistent presence of a bird in the cavity once the group had departed for the morning.
5/1/04	D. Bradshaw	Arrived at 0630. Incubation still underway.
5/4/04	D. Bradshaw	Arrived at site at 1700. Took a position beside Tree #94 (dead tree). LG male came in at 1705 and replaced PU/AL in the cavity. No food was delivered. Then at 1720 WH/AL replaced LG. YE/AL arrived and began working on resin wells on the tree at 1725, stopping to peer into the cavity once or twice, and then departing at 1735. At 1740 the unbanded bird flew to the cavity and looked in and then worked on the resin wells for a few minutes before flying to a nearby tree and grooming for 20 minutes. At 1745, the LG male returned and replaced the WH female. He remained in the cavity until I departed at 1810. There was no indication that food was being delivered at any time.
5/7/04  5/7/04 cont.	D. Bradshaw	No hatching yet. Was present from 0630 to 0715 and no birds were detected in area, suggesting continued incubation only. At 0715 a juvenile female (2003) from C3 (AL/LB) flew up to Tree #22 and peered into the cavity several times, then maneuvered around the tree as though inspecting the resin wells. From there she moved over to the nest tree (#93) and was rebuffed by the incubating adult when she peered into the cavity. She bolted toward the north end of the cluster. Seconds later a second bird (SC AL/YE – YE/YE/WH) moved in from the east and also visited Tree #22 followed by peering into the #93 nest cavity. It too was rebuffed by the incubating C5 adult, and the two interlopers moved off to the north. Neither of the 2 birds ever vocalized throughout the entire encounter suggesting they were intentionally trying not to



		draw attention to themselves, perhaps in an effort to usurp a nest cavity for themselves. Interestingly, this same pair of birds was observed being chase out of Cluster 3 on Saturday (5/1).
5/8/04	D. Bradshaw	Arrived at site at 0705. No birds in area. First bird in at 0720 replacing bird in nest cavity. Departing bird left area. Then at 0735 a bird returned and replaced bird in cavity. No evidence of food delivery. This was last activity until 0810 when I departed. I returned at 1700 and immediately observed a bird perching at the cavity entrance with a tiny prey item. This was repeated with a second food delivery of extremely small size and a general increase in activity over what had transpired in the morning. Appears that hatching must have occurred within last few hours.
5/16/04	D. Bradshaw B. Watts M. Byrd B. & L. Cole	Arrived at site at 0945 with banding crew. Banded 3 chicks 8 days old weighing 28 to 31.5 grams. Colors included Pink, Light Blue, and Dark Blue. Departed at 1115.
6/6/04	D. Bradshaw	Arrived just before sunrise. Could not account for where all the birds emerged from but was able to ID the 3 chicks within the first 45 minutes (DB & PI = male; LB = female). The color convention was changed this year to compensate for a lack of new colors so for future reference the young at C3 and C5 were banded with clan colors reversed, i.e. LB/WH/LB for C5. And all chicks this year, as last, show AL/color on the right leg.
6/7/04	D. Bradshaw B. Watts	We completed cavity checks in C5 (and C4), and removed 1 squirrel each from tree 191 and 98 in C5. Both were males.

#### Cluster 6 Observations – 2004

Date	Observer	Notes
5/8/04	D. Bradshaw	Arrived at 0930. Drove down to even with cluster site and heard at least one RCW in area. Got out and heard one, maybe two RCWs near west edge of cluster site. I attempted to close the gap but they departed to the northwest. Decided not to pursue. Wind was too hard to keep track of birds and didn't want to force them out of the area. Appeared to be lots of fresh work on Cavities 10 and 12. Intend to stake this area out on Monday a.m. (5/10).

Cluster 7 Observations – 2004		
Date	Observer	Notes
4/18/04	D. Bradshaw	<p>Arrived at site at 0615. C3 female (AL/YE) emerged from cavity 112 at 0630 (=SR). She flew immediately out of sight to the west toward C3. No other birds emerged after waiting another 10 minutes. Three of the cavities still show signs of woodpecker work but very little of it appears to be fresh.</p> <p>Departed site at 0645. The loss of cavity 113 in C7 seems to have forced out the NC male that had taken up there with the local female. That tree was the primary tree in that Cluster and it's loss may well have undermined a breeding attempt at the site. The NC male is now roosting in insert #2 at C3. The two still seem to have something of a bond, but it is unclear where, or if, they will attempt to nest.</p>